

What is claimed:

1. A shoulder-belt-portion guiding assembly for more convenience and increased survival chance of a passenger of a transport system in an accident or during an in-flight turbulence, comprising a height-adjustable shoulder-belt-portion guiding deflector (5, 5a, 5b, 5.10c), which, serving as a member of a head rest (3.6, 3.6a to 3.6c) of a seat of the transport system, when adjusted to the body proportion of the passenger, loosely guides a shoulder belt portion (1.2) of a seat belt, which downwardly extends over a shoulder and an upper body of the belted passenger; and prevents to a large extent neck injury in the accident or during in-flight turbulence.

2. The shoulder-belt-portion guiding assembly according to claim 1, wherein the head rest (3.6a) is height-adjustable and has the shoulder-belt-portion guiding deflector (5a) and at least two stiff head-rest tubes (5.10), moveable along members of a seat-backrest frame (3.4), guided thereby and locked therein, where the head rest (3.6a) is adjusted to the height of the head of the passenger and locked, thus resulting in automatic adaptation of the shoulder-belt-portion guiding deflector with the shoulder belt portion (1.2) to the body proportion of the passenger.

3. The shoulder-belt-portion guiding assembly according to claim 1, wherein a main latch plate (9), moveable along the shoulder belt portion (1.2) or a lap belt portion (1.3) up to a main-latch-plate adaptor (40), fastened to the lap belt portion (1.3), is released from a main buckle assembly (9.1) when the seat belt is not being used and the seat belt is retracted by a belt retractor (13, 13b) until a spool (13.1) of which, containing an excess belt portion (1.41) of the seat belt, is full; where the passenger, wanting to use the seat belt, easily accesses the released main latch plate (9), loosely retained by the main-latch-plate adaptor (40) and located in a resting position (NU) between the shoulder-belt-portion guiding deflector (5, 5a, 5b, 5.10c) and a seat cushion (3.1).

4. The shoulder-belt-portion guiding assembly according to claim 3, wherein the resting position (NU) of the released main latch plate (9) is at a height of an elbow (50) of the passenger.

5. The shoulder-belt-portion guiding assembly according to claim 3, wherein the adaptor (40) consists of two pieces (40.1, 40.2), where a stud (40.11) of the first piece (40.1) is pressed through the lap belt portion (1.3), a belt webbing (1.31) of the lap belt portion (1.3) into a space, defined by the stud (40.11) with diameter (d_1) and a hole (40.21) of the second piece (40.2) with diameter (d_2) bigger than (d_1), and into the hole (40.21) and jams therein.

6. The shoulder-belt-portion guiding assembly according to claim 1, wherein the shoulder-belt-portion guiding deflector (5, 5b), guided by a fixed member (3.9b, 3.20) of a seat-backrest frame (3.4), moveable therealong and nonrotating about a longitudinal centre axis (m_c , V_c) thereof, has

an upper portion, projecting through a top edge (3.22) of a seat backrest (3.2) and provided with an aperture (5.9), loosely guiding the shoulder belt portion (1.2); and a locking handle (5.2) of a locking device (80), having a latch (3.65) which, when unlocked, allows the movable, shoulder-belt-portion guiding deflector (5, 5b) with the shoulder belt portion (1.2) to be moved and adapted to the body proportion of the passenger.

7. The shoulder-belt-portion guiding assembly according to claim 6, wherein the member of the seat-backrest frame (3.4) is a fixed guide tube (3.9b), the movable, shoulder-belt-portion guiding deflector (5b) has a pair of movable, semi-circular shaped portions (5.11b) in contact with a pair of fixed, semi-circular shaped edges (3.91b) of the fixed guide tube (3.9b);

where the pair of movable, semi-circle shaped portion (5.11b) slides along the pair of fixed, semi-circle shaped edges (3.91b), when the movable, shoulder-belt-portion guiding deflector (5b) is moved along the fixed guide tube (3.9b).

8. The shoulder-belt-portion guiding assembly according to claim 6, wherein the movable, shoulder-belt-portion guiding deflector (5) is a tube having a pair of movable, V-shaped contact-portions (5.60) each of which is defined by a pair of movable, slanting members (5.81) and a movable, intermediate member interconnecting both movable, slanting members (5.81) and

the fixed member (3.20) of the seat-backrest frame (3.4) is a tube-shaped girder having a pair of fixed, V-shaped contact portions (3.60) each of which is defined by a pair of fixed, slanting members (3.81) and a fixed, intermediate member interconnecting both fixed, slanting members (3.81);

where the movable, slanting members (5.81) in contact with the fixed, slanting members (3.81) slide therealong, when the movable, shoulder-belt-portion guiding deflector (5) is moved along the fixed member (3.20).

9. The shoulder-belt-portion guiding assembly according to claim 8, wherein the locking device (80) comprises

a shaft (3.64), projecting through the fixed, tube-shaped girder (3.20) and a pair of first ends of levers (3.66) secured to the shaft (3.64) by a pair of pins (3.62);

the movable, tube-shaped, shoulder-belt-portion guiding deflector (5), provided with a plurality of locking slots (L_1) to (L_n), where (i) = (1) to (n);

the latch (3.65), projecting through a pair of oblong holes (3.69) of the movable, tube-shaped, shoulder-belt-portion guiding deflector (5), a pair of second ends of the levers (3.66) and a pair of first eyes of leaf springs (3.63) and secured by a pair of retaining rings (3.67);

a pair of rivets (3.68), each of which with a distance sleeve (3.71) protruding through a second eye of the leaf spring (3.63) and fastened to the movable, shoulder-belt-portion guiding deflector (5); and

the locking handle (5.2), fastened to one end of the shaft (3.64), where the locking handle (5.2), when rotated, moves the latch (3.65), being detached from the locking slot (L_2), from a closed position (C) to an open position (O).

10. The shoulder-belt-portion guiding assembly according to claim 1, wherein the shoulder-belt-portion guiding deflector (5.10c), tube-shaped, guided by a fixed, tube-shaped girder (3.20c, 3.20d) of a seat-backrest frame (3.4), moveable therealong and nonrotating about a longitudinal centre axis (z_c) thereof, has

an upper portion, projecting through a top edge (3.22) of a seat backrest (3.2);

a belt deflector (5c), loosely guiding the shoulder belt portion (1.2) and having a pair of transverse attachment holes (5.22), through which two bolts (5.26) are inserted and protruding portions of the bolts (5.26) are bolted to the upper portion; and

a locking handle (5.2c) of a locking device (80c), having a latch (5.65), which, when unlocked, allows the movable, tube-shaped, shoulder-belt-portion guiding deflector (5.10c) with the shoulder belt portion (1.2) to be moved and adapted to the body proportion of the passenger.

11. The shoulder-belt-portion guiding assembly according to claim 10, wherein the movable, tube-shaped, shoulder-belt-portion guiding deflector (5.10c) has two pairs of movable, quarter-circle shaped tube-edges (5.45) in contact with two pairs of fixed, quarter-circle shaped girder-edges (3.45) of the fixed girder (3.20c, 3.20d);

5 where the movable, quarter-circle shaped tube-edges (5.45) slide along the fixed, quarter-circle shaped girder-edges (3.45), when the movable, tube-shaped, shoulder-belt-portion guiding deflector (5.10c) is moved along the fixed girder (3.20c, 3.20d).

12. The shoulder-belt-portion guiding assembly according to claim 10, wherein the locking device (80c) comprises

10 the movable, tube-shaped, shoulder-belt-portion guiding deflector (5.10c), provided with a plurality of locking slots (L_1) to (L_n), where (i) = (1) to (n);

the latch (5.65), biased by a coil spring (5.63), sustained by a spring washer (5.66a) of a guiding sleeve (5.66) and a latching sleeve (5.61) secured to the latch (5.65) by a pin

(5.62), and guided by the guiding sleeve (5.66) having a rectangular attachment base

15 (5.66b), where the latch (5.65) is inserted through a girder-hole (3.70) of the fixed girder (3.20c, 3.20d) and a tube-hole (5.70) of the movable, tube-shaped, shoulder-belt-portion guiding deflector (5.10c) until the attachment base (5.66b) comes into contact with to a side tube-wall (5.43) of the movable, tube-shaped, shoulder-belt-portion guiding deflector (5.10c) and, finally, is fastened thereto by two bolts (5.67); and

20 the locking handle (5.2c), fastened to one end portion of the latch (5.65) by a pin (5.68), where the locking handle (5.2c), when pulled, moves the latch (5.65) from the locking slot (L_3), from a closed position (C) to an open position (O).

13. The shoulder-belt-portion guiding assembly according to claim 12, wherein the head rest (3.6c) is fastened to a free-end of the upper portion of the tube-shaped, shoulder-belt-portion guiding deflector (5.10c).

14. The shoulder-belt-portion guiding assembly according to claim 10, wherein the belt deflector (5c) has additionally a pair of longitudinal attachment holes (5.23).

15. The shoulder-belt-portion guiding assembly according to claim 14, wherein the belt deflectors (5c) are substitutes for D-rings (12), lower belt deflectors (17) and the shoulder-belt-portion guiding deflectors (5a).

16. The shoulder-belt-portion guiding assembly according to claim 10, wherein the tube-shaped girder (3.20d) has

a pair of top oblong holes (3.53), a pair of intermediate holes (3.52), a pair of bottom holes (3.51), to which a belt retractor (13b) and a pair of coupling fittings (1.2b) with
5 vibration-dampening energy absorbers are bolted together with two big washers (13.8) by two bolts (13.9);

two pairs of sites of predetermined fracture (s), located between the respective holes proximate to each other; and

a centre oblong hole (3.25d), to receive an extending belt portion (1.4) and facilitate the
10 pulling of the extending belt portion (1.4) and an upward movement of the belt retractor (13b) to the upper edges of the pair of top oblong holes (3.53) in the accident or during in-flight turbulence.

17. The shoulder-belt-portion guiding assembly according to claim 1, wherein guide tubes (3.9b), tube-shaped girders (3.20, 3.20c, 3.20d) and the shoulder-belt-portion guiding
15 deflectors (5, 5b, 5.10c) are extrusion components.

18. The shoulder-belt-portion guiding assembly according to claim 17, wherein the extrusion components are made from light metal.